

H13083

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Ocean Service

DESCRIPTIVE REPORT

Type of Survey: Navigable Area

Registry Number: H13083

LOCALITY

State(s): California

General Locality: Channel Islands National Marine Sanctuary

Sub-locality: Cuyler Harbor to Simonton Cove

2017

CHIEF OF PARTY
Benjamin K. Evans, CDR/NOAA

LIBRARY & ARCHIVES

Date:

HYDROGRAPHIC TITLE SHEET

H13083

INSTRUCTIONS: The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

State(s): **California**

General Locality: **Channel Islands National Marine Sanctuary**

Sub-Locality: **Cuyler Harbor to Simonton Cove**

Scale: **20000**

Dates of Survey: **10/02/2017 to 11/04/2017**

Instructions Dated: **08/25/2017**

Project Number: **OPR-L397-RA-17**

Field Unit: **NOAA Ship *Rainier***

Chief of Party: **Benjamin K. Evans, CDR/NOAA**

Soundings by: **Multibeam Echo Sounder**

Imagery by: **Multibeam Echo Sounder Backscatter**

Verification by: **Pacific Hydrographic Branch**

Soundings Acquired in: **meters at Mean Lower Low Water**

Remarks:

The purpose of this survey is to provide contemporary surveys to update National Ocean Service (NOS) nautical charts. All separates are filed with the hydrographic data. Any revisions to the Descriptive Report (DR) generated during office processing are shown in bold red italic text. The processing branch maintains the DR as a field unit product, therefore, all information and recommendations within the body of the DR are considered preliminary unless otherwise noted. The final disposition of surveyed features is represented in the OCS nautical chart update products. All pertinent records for this survey, including the DR, are archived at the National Centers for Environmental Information (NCEI) and can be retrieved via <http://www.ncei.noaa.gov/>.

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Descriptive Report to Accompany Survey H13083

Project: OPR-L397-RA-17

Locality: Channel Islands National Marine Sanctuary

Sublocality: Cuyler Harbor to Simonton Cove

Scale: 1:20000

October 2017 - November 2017

NOAA Ship *Rainier*

Chief of Party: Benjamin K. Evans, CDR/NOAA

A. Area Surveyed

This project is referred to as H13083, "Cuyler Harbor to Simonton Cove" (sheet 2) in the Project Instructions. The survey area is north of San Miguel Island, California. The survey area covers approximately 12.8 square nautical miles.

A.1 Survey Limits

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
34° 7' 23.23" N 120° 26' 24.04" W	34° 2' 36.19" N 120° 18' 50.09" W

Table 1: Survey Limits

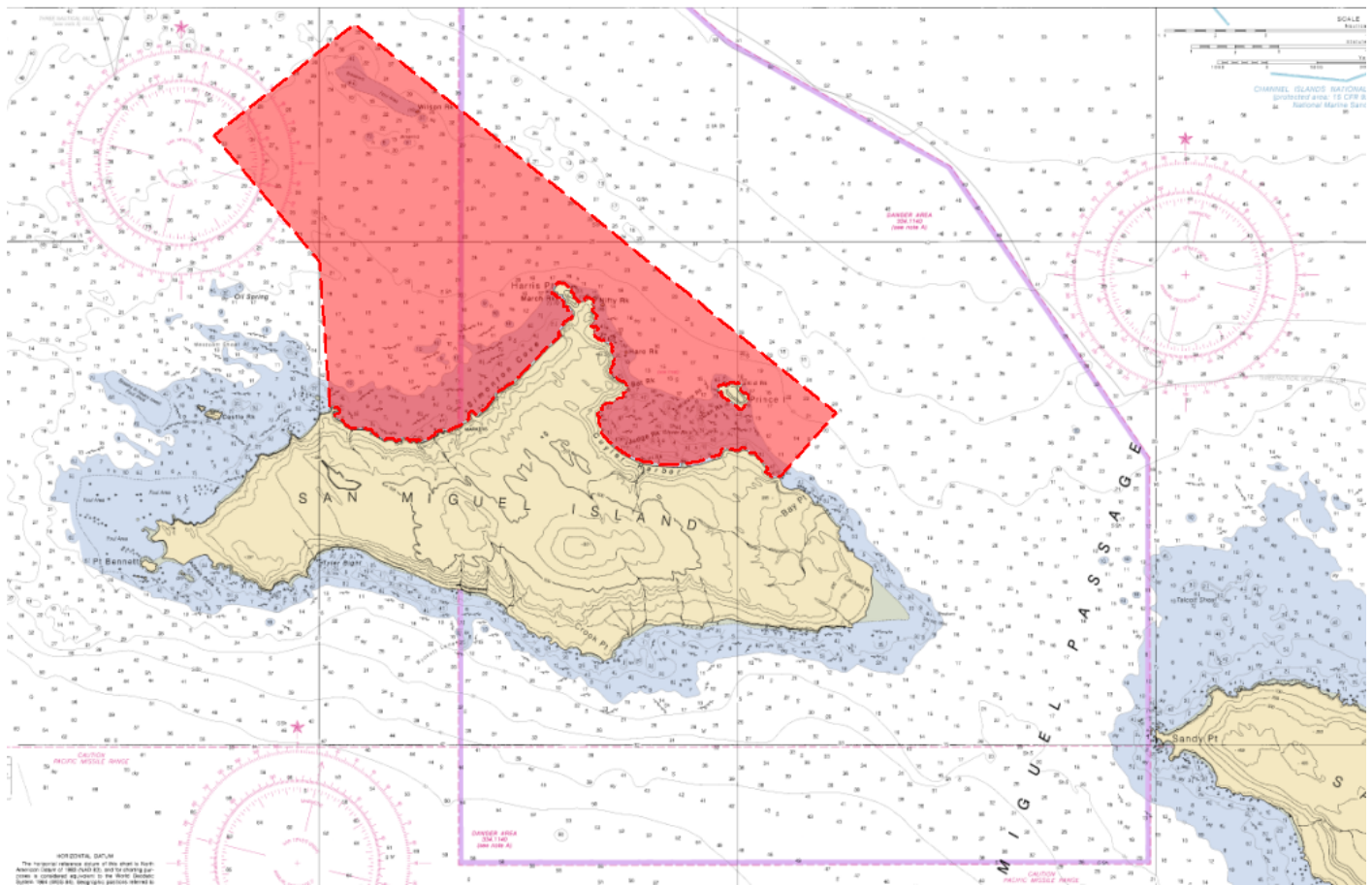


Figure 1: H13083 assigned survey area.

Data were acquired within the assigned survey limits as required in the Project Instructions and HSSD unless otherwise noted in this report.

A.2 Survey Purpose

H13083 is part of a collaborative mapping project in the Channel Islands undertaken by NOAA's Office of Coast Survey and Office of National Marine Sanctuaries. This survey is intended to provide both high resolution bathymetric data to support nautical chart updates and acoustic backscatter imagery for habitat characterization and substrate analysis. This survey is intended to fully supersede the previous work in this area, which was conducted in the 1930s with lead line sounding, visual positioning techniques, and/or single beam technology.

A.3 Survey Quality

The entire survey is adequate to supersede previous data.

Pydro QC Tools 2 Grid QA was used to analyze H13083 multibeam echosounder (MBES) data density. The submitted H13083 variable-resolution (VR) surface met HSSD density requirements.

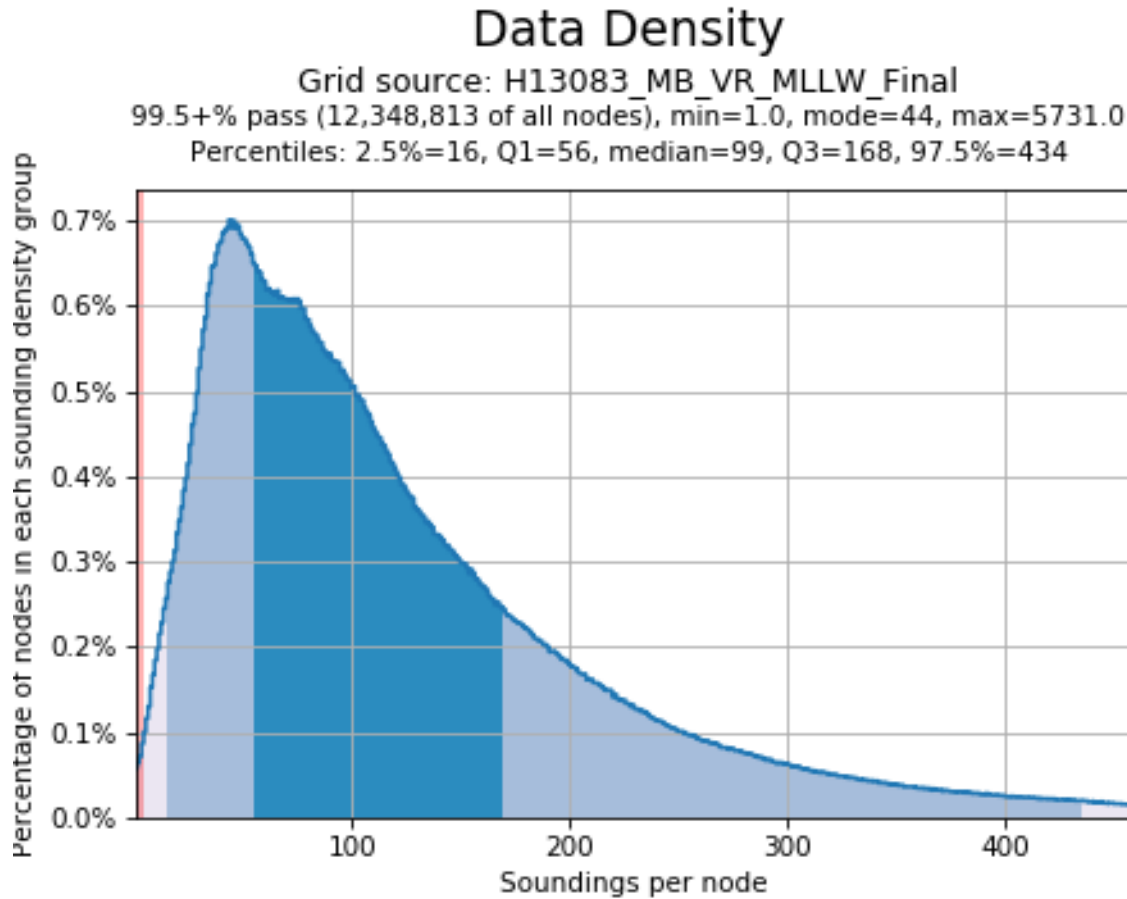


Figure 2: Pydro derived histogram plot showing HSSD density compliance of H13083 finalized variable-resolution MBES data.

A.4 Survey Coverage

The following table lists the coverage requirements for this survey as assigned in the project instructions:

Water Depth	Coverage Required
All waters in survey areas	Complete Coverage (refer to HSSD Section 5.2.2.3)

Table 2: Survey Coverage

Some nearshore rocks created hazardous survey conditions and were too unsafe to get full coverage on, causing some holidays in the MBES data. Most of these holidays are associated with features that are

addressed in the final feature file. Those that are not directly related to features in the final feature file are addressed in this section.

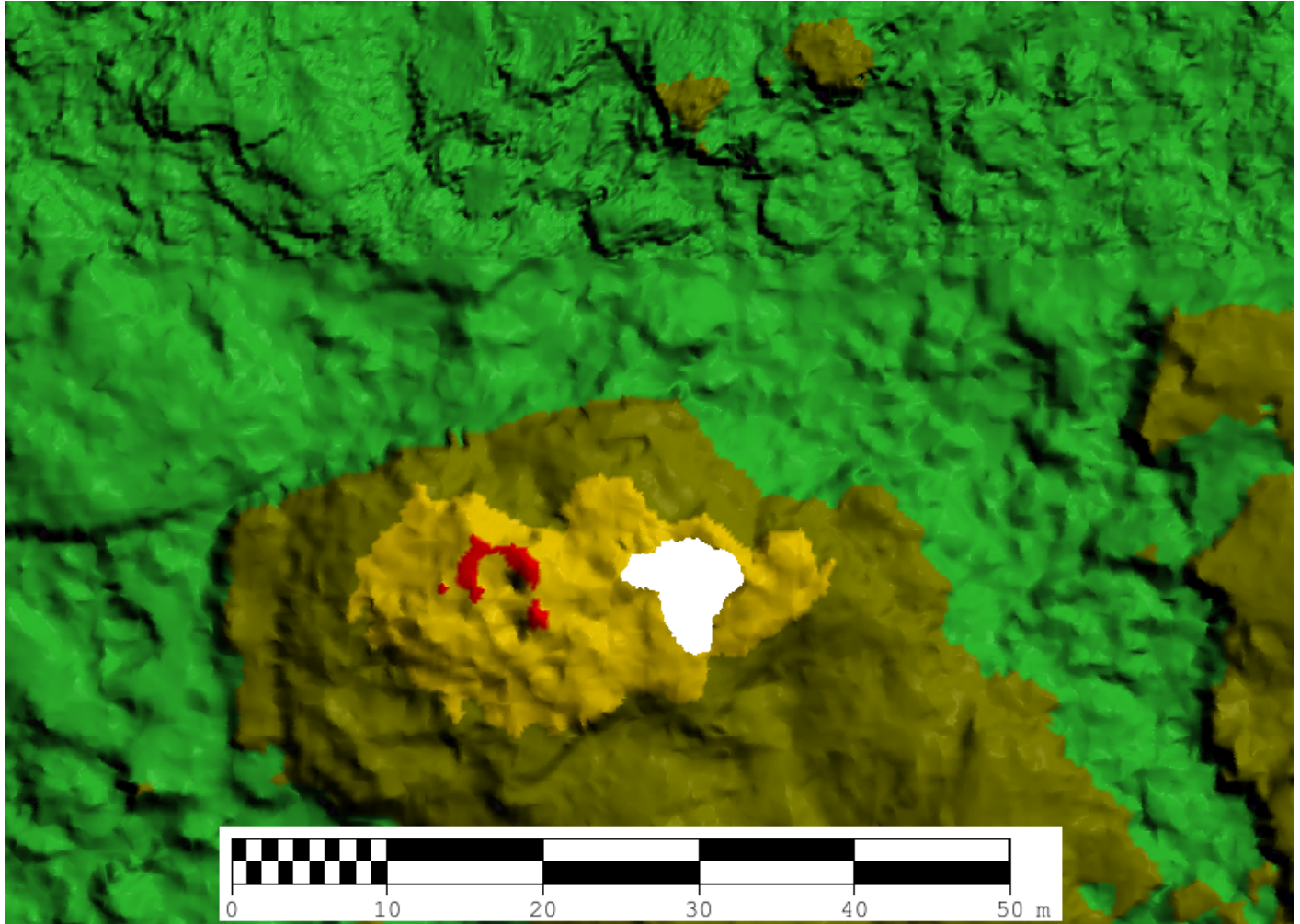


Figure 3: This holiday (34-03-21.92N, 120-20-48.76W) was caused by unsafe conditions near a charted rock. The shoalest sounding recorded around the holiday was 2.36 meters. It should be noted that 7 meters to the west of the holiday a shoaler sounding of 1.6 meters was obtained. There was a less favorable tide when a launch was sent in an attempt to address this holiday.

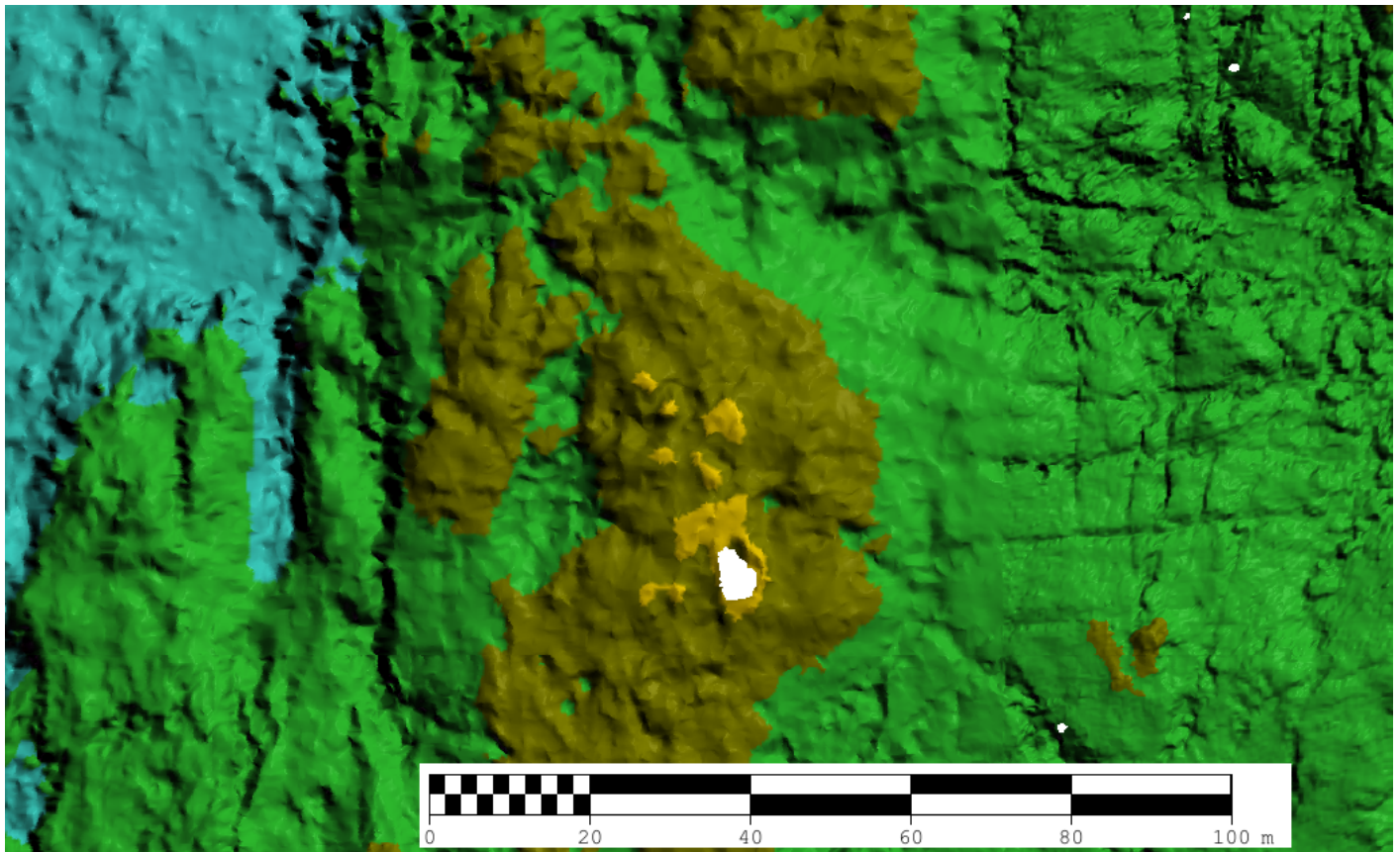


Figure 4: This holiday (34-06-43.02N, 120-24-35.90W) is on the top of a rock which could not be fully developed due to hazardous conditions. It should be noted that this holiday is inside of a charted foul area. Also, large swells and breakers were observed in this area. The shoalest sounding recorded here was 2.8 meters.

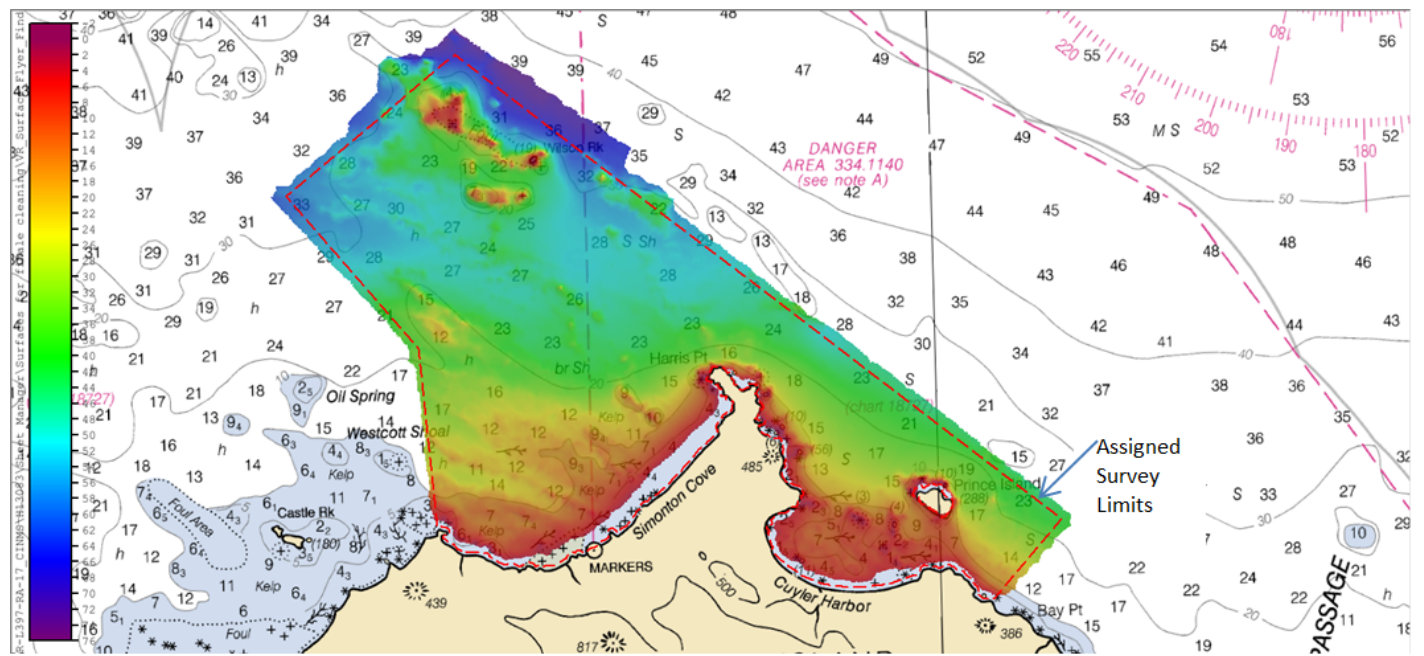


Figure 5: H13083 MBES coverage and assigned survey limits (Chart 18721).

A.6 Survey Statistics

The following table lists the mainscheme and crossline acquisition mileage for this survey:

	HULL ID	<i>2801</i>	<i>2802</i>	<i>2803</i>	<i>2804</i>	<i>Total</i>
LNM	SBES Mainscheme	0	0	0	0	0
	MBES Mainscheme	89.22	116.12	43.79	67.91	317.04
	Lidar Mainscheme	0	0	0	0	0
	SSS Mainscheme	0	0	0	0	0
	SBES/SSS Mainscheme	0	0	0	0	0
	MBES/SSS Mainscheme	0	0	0	0	0
	SBES/MBES Crosslines	0	21.71	0	0	21.71
	Lidar Crosslines	0	0	0	0	0
Number of Bottom Samples						0
Number Maritime Boundary Points Investigated						0
Number of DPs						50
Number of Items Investigated by Dive Ops						0
Total SNM						12.79

Table 3: Hydrographic Survey Statistics

The following table lists the specific dates of data acquisition for this survey:

Survey Dates	Day of the Year
10/05/2017	278
10/06/2017	279

Survey Dates	Day of the Year
10/07/2017	280
10/17/2017	290
10/25/2017	298
10/26/2017	299
11/01/2017	305
11/02/2017	306
11/03/2017	307
11/04/2017	308

Table 4: Dates of Hydrography

B. Data Acquisition and Processing

B.1 Equipment and Vessels

Refer to the Data Acquisition and Processing Report (DAPR) for a complete description of data acquisition and processing systems, survey vessels, quality control procedures and data processing methods. Additional information to supplement sounding and survey data, and any deviations from the DAPR are discussed in the following sections.

B.1.1 Vessels

The following vessels were used for data acquisition during this survey:

Hull ID	2801	2802	2803	2804	1907	1905
LOA	8.8 meters	8.8 meters	8.8 meters	8.8 meters	5.7 meters	5.7 meters
Draft	1.1 meters	1.1 meters	1.1 meters	1.1 meters	0.35 meters	0.35 meters

Table 5: Vessels Used

All the survey data for H13083 was acquired by survey launches 2801 RA-4, 2802 RA-5, 2803 RA-3, and RA-6 2804. The launches acquired the MBES soundings sound velocity profiles and bottom sample photographs. The skiffs (1907, 1905) conducted all shoreline verification and feature data.

B.1.2 Equipment

The following major systems were used for data acquisition during this survey:

Manufacturer	Model	Type
Kongsberg	EM2040	MBES
Sea-Bird Electronics	SBE 19Plus SeaCat Profiler	Conductivity, Temperature, and Depth Sensor
Applanix	POS M/V v5	Positioning and Attitude System
Reson	SVP71	Sound Speed System

Table 6: Major Systems Used

B.2 Quality Control

B.2.1 Crosslines

Multibeam crosslines acquired for this survey totaled 6.85% of mainscheme acquisition.

Multibeam crosslines were acquired by RAINIER launch 2802 across most depth ranges and boat days. The hydrographer deems their spatial distribution adequate for evaluating the internal consistency of H13083 survey data. Analysis was performed using the Compare Grids function in Pydro Explorer on 4-meter resolution surfaces of H13083 mainscheme only and crossline only data. 99.5+% of nodes met allowable uncertainties. Results are below.

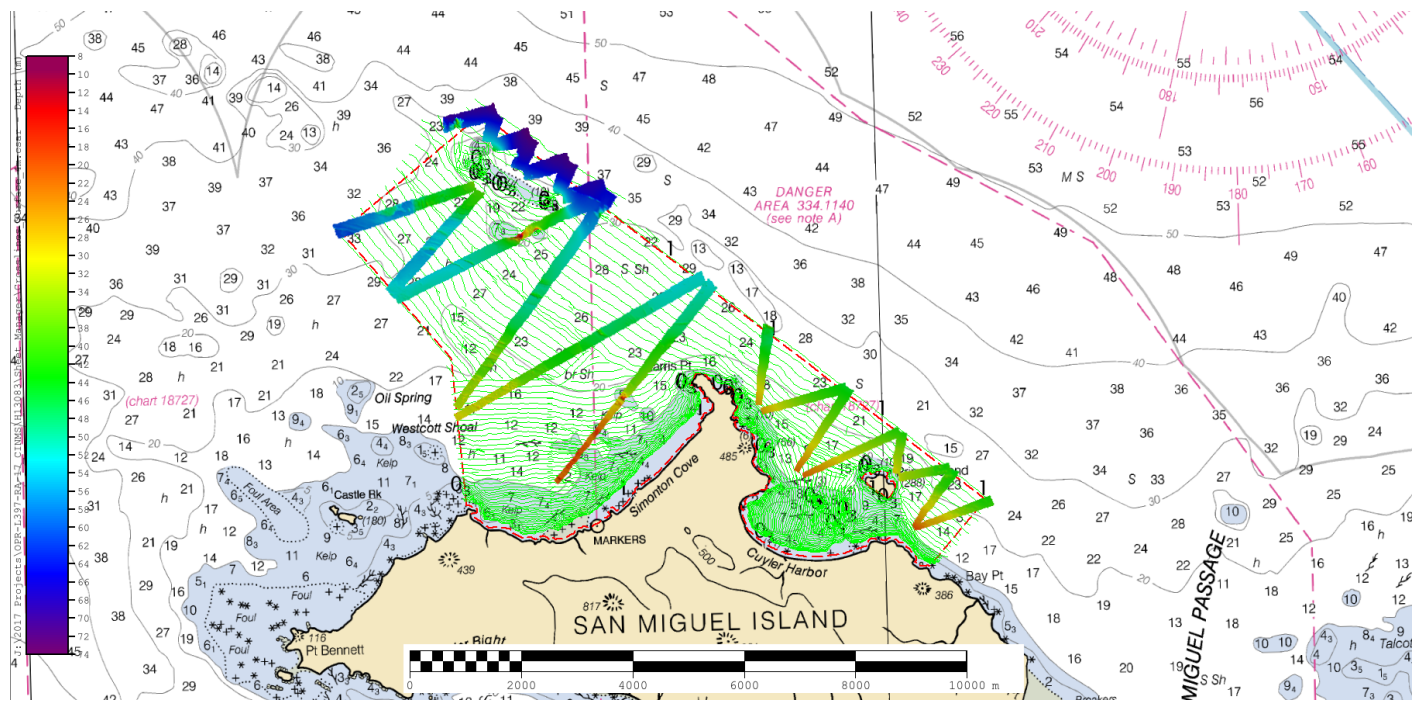


Figure 6: H13083 crossline surface overlaid on mainscheme track lines.

Comparison Distribution

Per Grid: H13083_MS_4M_MLLW_final-H13083_XL_4M_MLLW_final_fracAllowErr.csar

99% nodes pass (474638), min=0.0, mode=0.1 mean=0.1 max=18.0

Percentiles: 2.5%=0.0, Q1=0.0, median=0.1, Q3=0.1, 97.5%=0.5

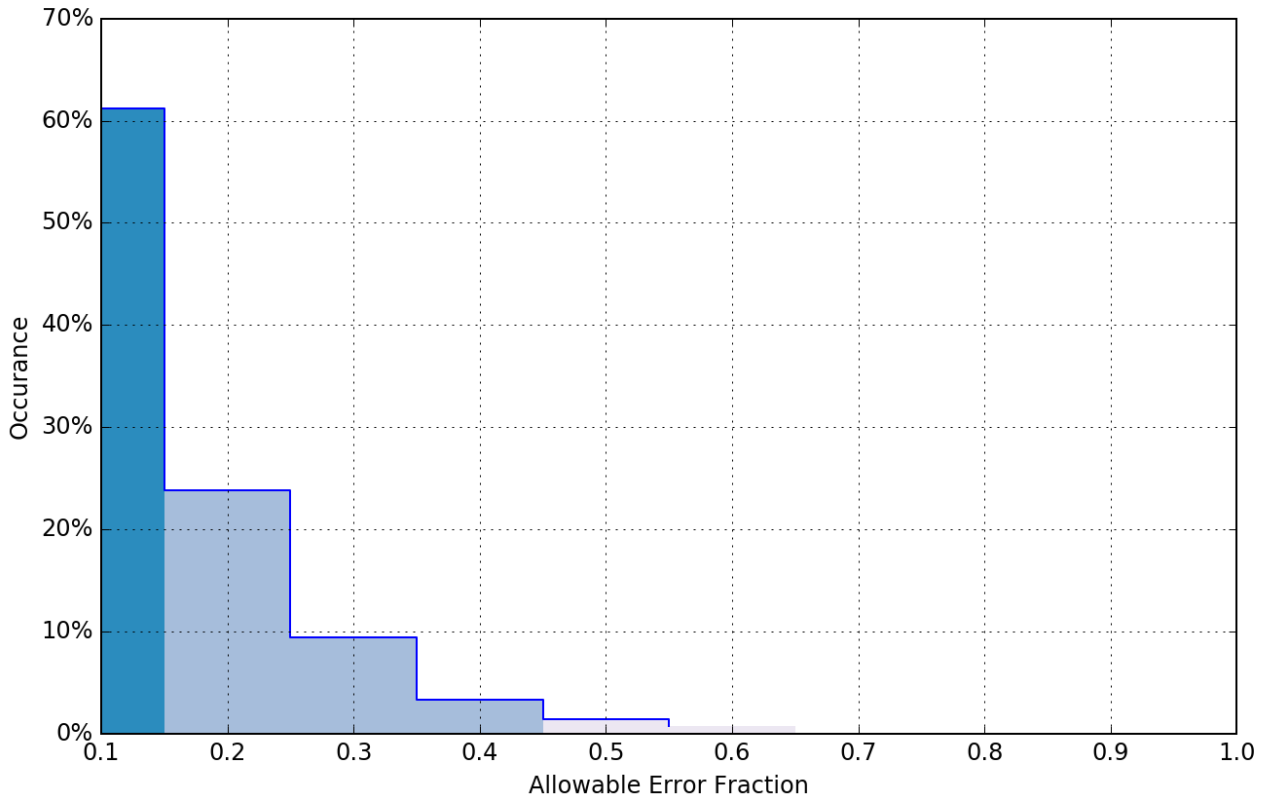


Figure 7: Pydro-derived plot showing percentage-pass value of H13083 mainscheme to crossline data.

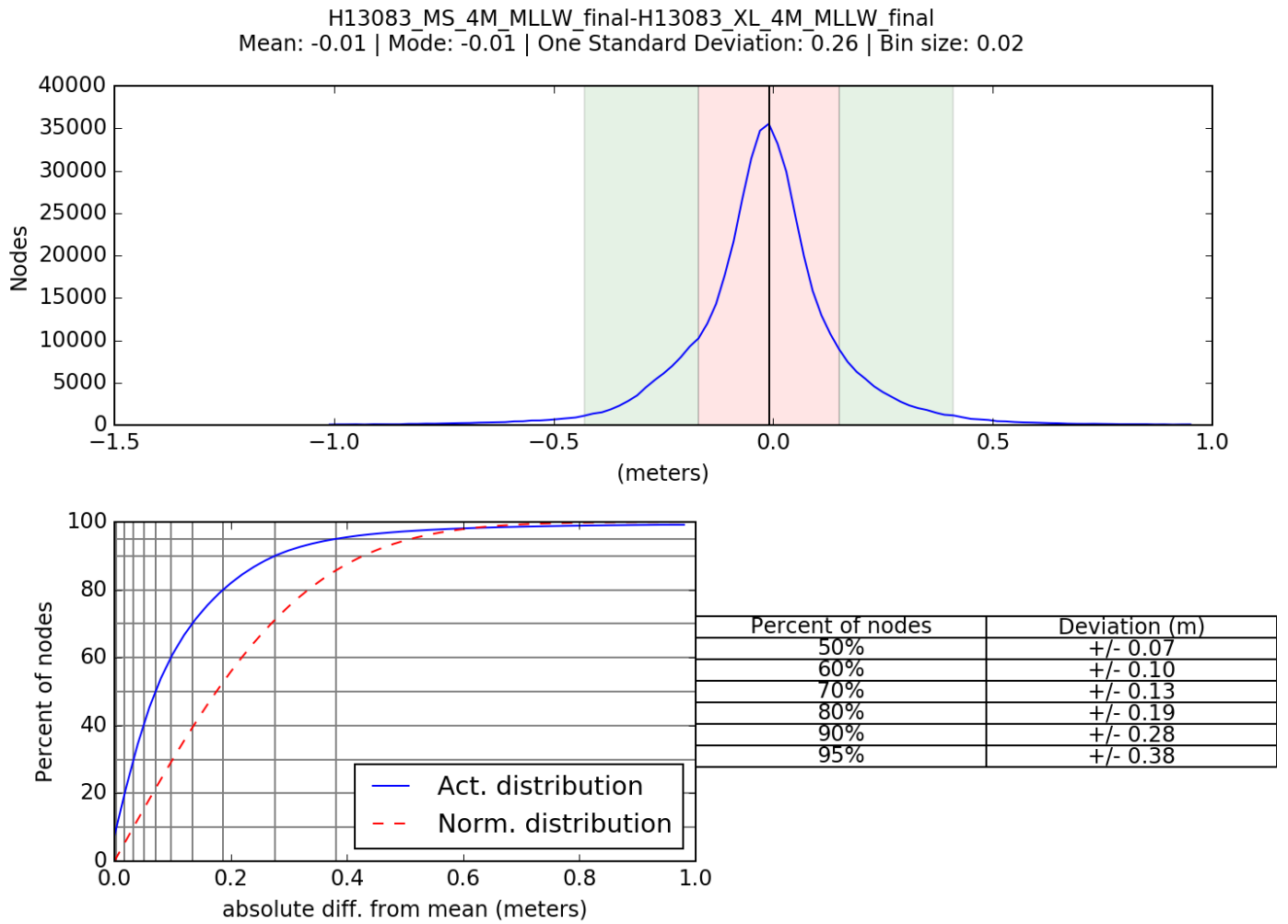


Figure 8: Pydro-derived plot showing the statistical results of a comparison between H13083 mainscheme to crossline data.

Node Depth vs. Allowable Error Fraction

H13083_MS_4M_MLLW_final-H13083_XL_4M_MLLW_final_fracAllowErr.csar, total comparisons 477735

Failed Stats [-inf,-1): min=-12.2, 2.5%=-4.7, Q1=-2.1, mean=-1.9, median=-1.5, Q3=-1.2, 97.5%=-1.0, max=-1.0

Failed Stats (+1,+inf): min=1.0, 2.5%=1.0, Q1=1.2, median=1.5, mean=2.0, Q3=2.1, 97.5%=5.7, max=18.0

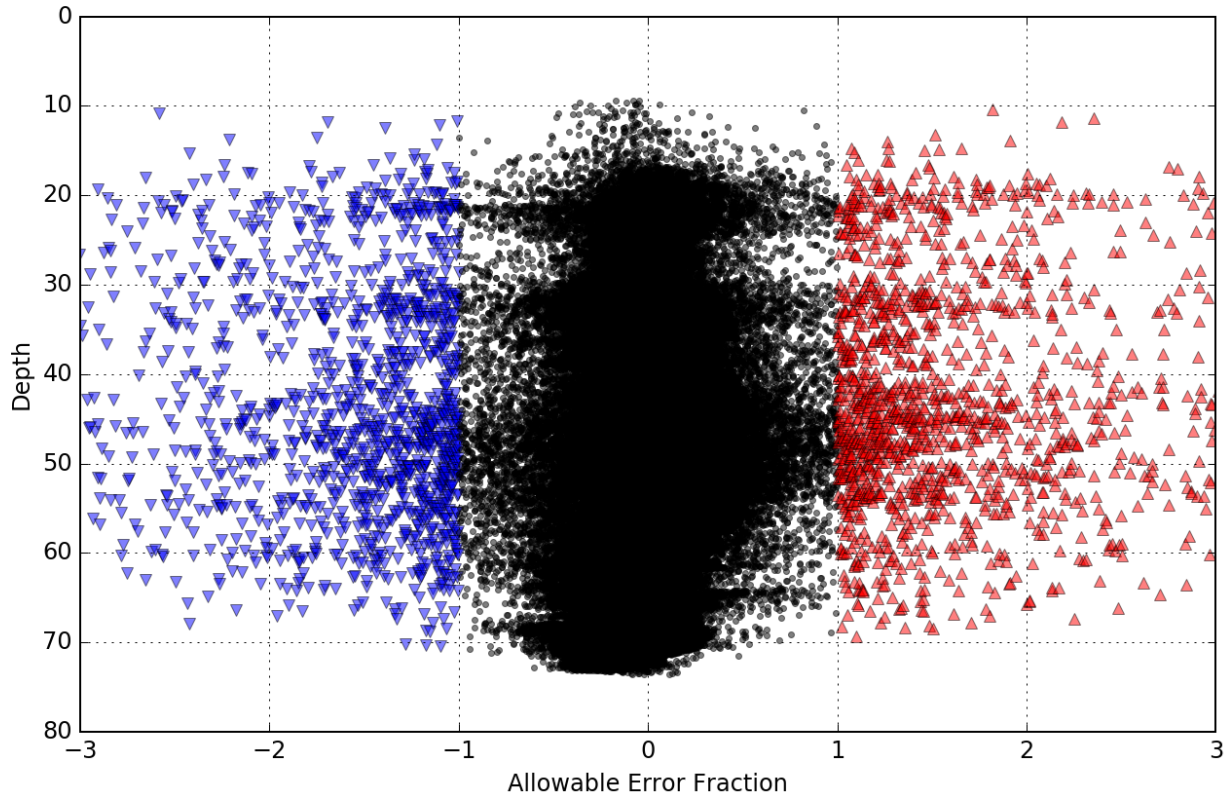


Figure 9: Pydro-derived plot showing node depth vs. allowable error fraction of H13083 mainscheme to crossline data.

B.2.2 Uncertainty

The following survey specific parameters were used for this survey:

Method	Measured	Zoning
ERS via VDATUM	0 meters	0.082867 meters

Table 7: Survey Specific Tide TPU Values.

Hull ID	Measured - CTD	Measured - MVP	Surface
2801,2802,2803,2804	3 meters/second	N/A meters/second	0.15 meters/second

Table 8: Survey Specific Sound Speed TPU Values.

Total Propagated Uncertainty (TPU) values for survey H13083 were derived from a combination of fixed values for equipment and vessel characteristics, as well as from field assigned values for sound speed uncertainties. Tidal uncertainty was provided in the metadata accompanying the NOAA vertical datum transformation model used for this survey. A measured uncertainty of 0.082867 meters was entered to account for VDATUM processing methods.

In addition to the usual a priori estimates of uncertainty, some real-time and post-processed uncertainty sources were also incorporated into the depth estimates of this survey. Real-time uncertainties from Kongsberg MBES sonars were recorded and applied in post-processing. Applanix TrueHeave (POS) files, which record estimates of heave uncertainty, were applied during post-processing. Finally, the post processed uncertainties associated with vessel roll, pitch, yaw and position were applied in Caris HIPS using SBET and RMS files generated using POSpac MMS software.

Uncertainty values of the submitted finalized grid were calculated in Caris using "Greater of the Two" of uncertainty and standard deviation (scaled to 95%). Pydro Finalized CSAR Surface QA tools were used to analyze H13083 TVU compliance, a histogram plot of the results is shown below.

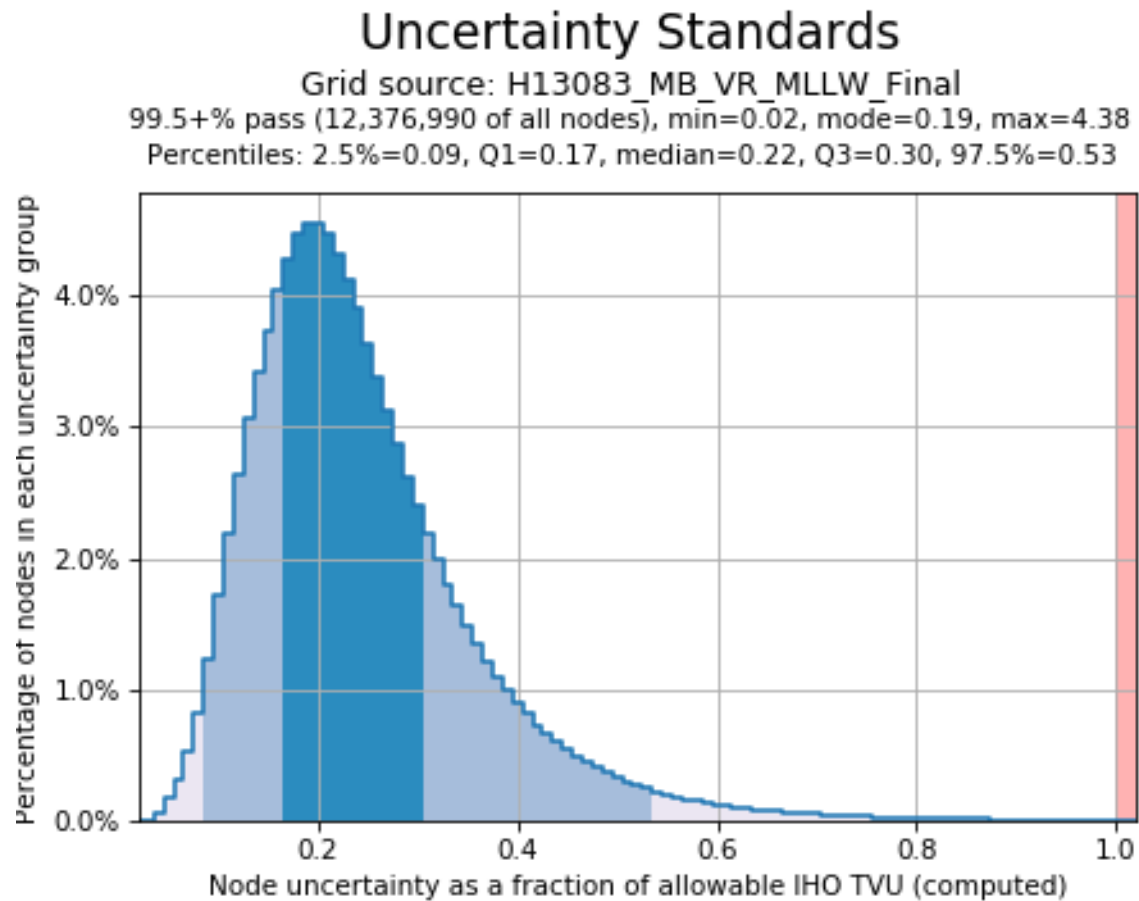


Figure 10: Pydro derived histogram plot showing TVU compliance of H13083 finalized multi-resolution MBES data.

B.2.3 Junctions

Three surveys junction with H13083, two are contemporary and part of project OPR-L397-RA-17. The third was conducted by NOAA Ship Bell M. Shimada in 2016.

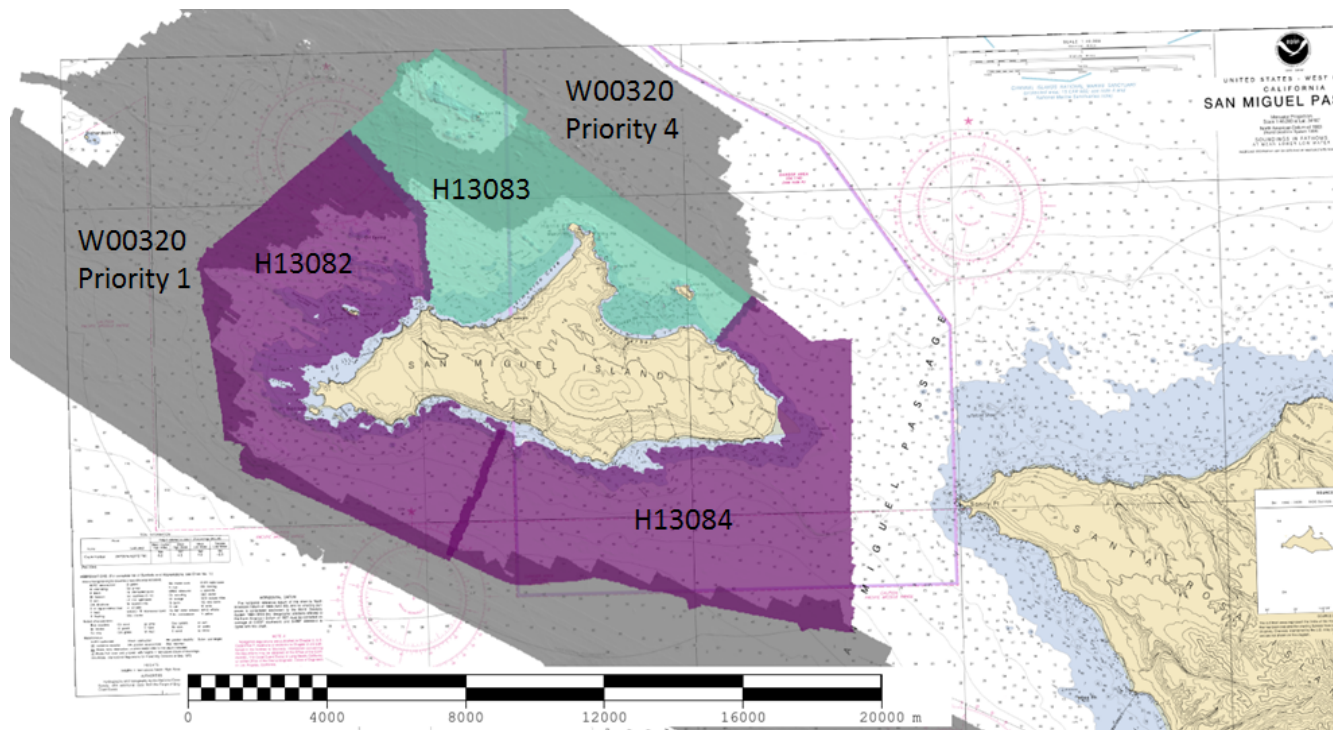


Figure 11: Overview showing all of the junctions with survey H13083.

The following junctions were made with this survey:

Registry Number	Scale	Year	Field Unit	Relative Location
H13082	1:20000	2017	NOAA Ship RAINIER	W
H13084	1:20000	2017	NOAA Ship RAINIER	SE
W00320	1:40000	2016	NOAA Ship BELL M. SHIMADA	N

Table 9: Junctioning Surveys

H13082

Refer to the H13082 Descriptive Report for junction analysis.

H13084

The junction of the survey H13084 covers an area of 0.11 square nautical miles along the southeastern boundary of the survey. A comparison was made with the Compare Grids function of Pydro Explorer using a difference surface derived from 4-meter Caris .csar surfaces of each survey. Analysis of the difference

surface indicated that H13083 is an average of 0.023 meters deeper than H13082 with a standard deviation of 0.161 meters. See below graphs for more information.

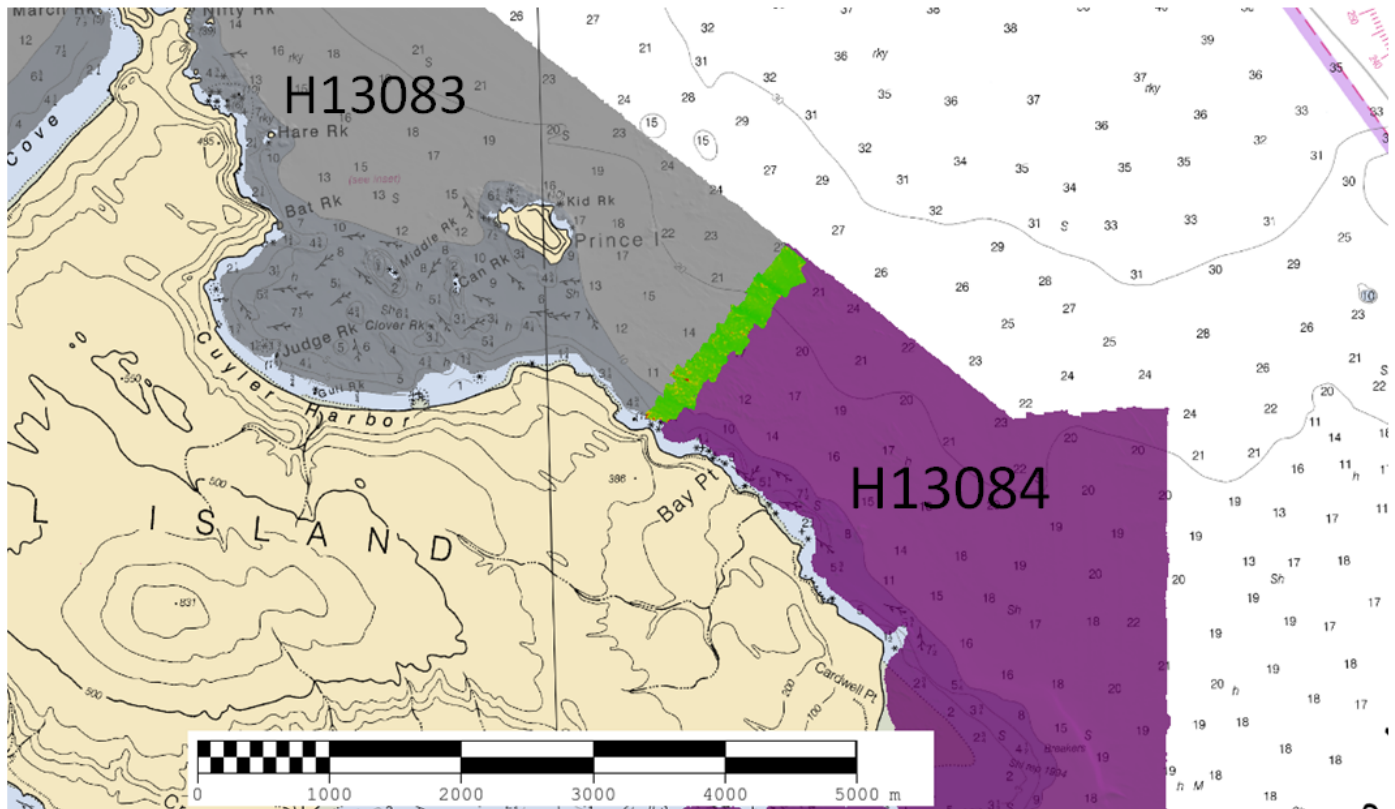


Figure 12: Overview of survey junction with H13084.

Comparison Distribution

Per Grid: H13083_MB_4M_MLLW-H13084_MB_4m_MLLW_fracAllowErr.csar

99% nodes pass (23193), min=0.0, mode=0.1 mean=0.1 max=6.8

Percentiles: 2.5%=0.0, Q1=0.0, median=0.1, Q3=0.1, 97.5%=0.5

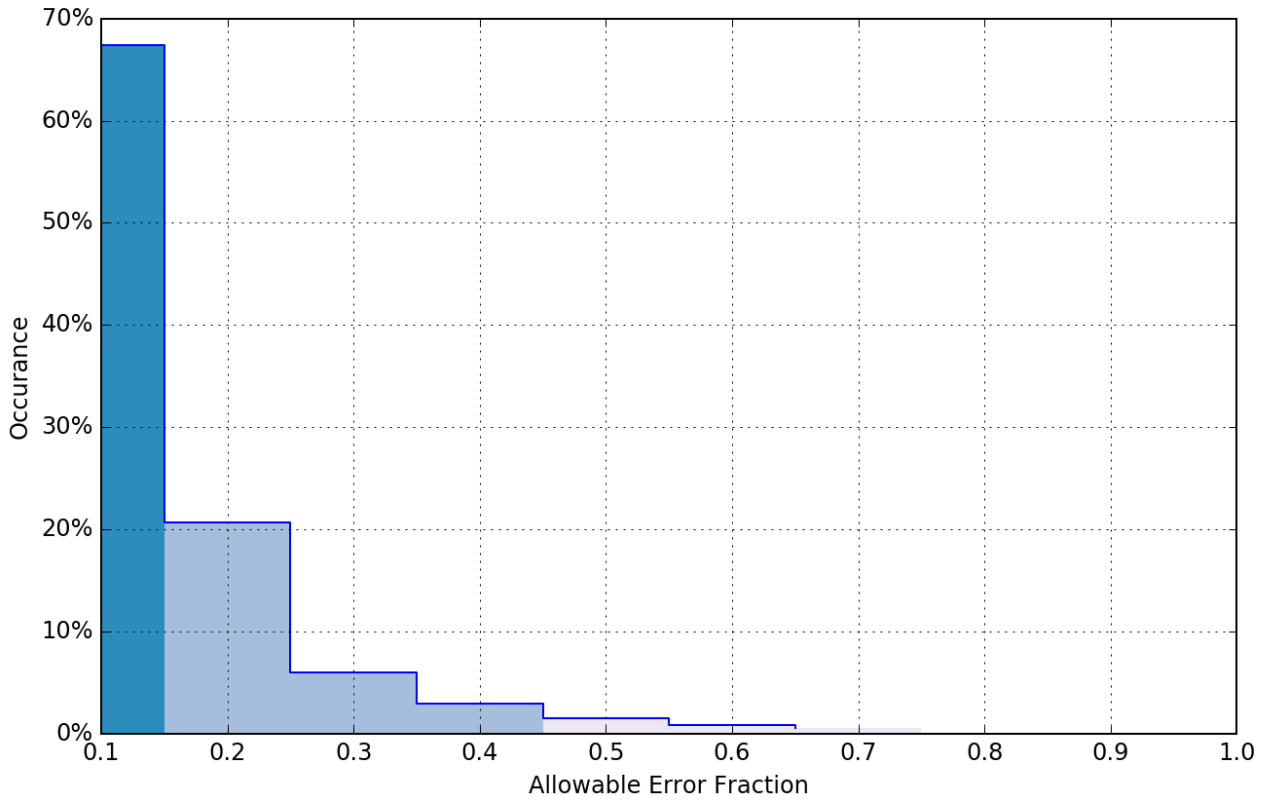


Figure 13: Plot showing the allowable error between H13083 and H13084.

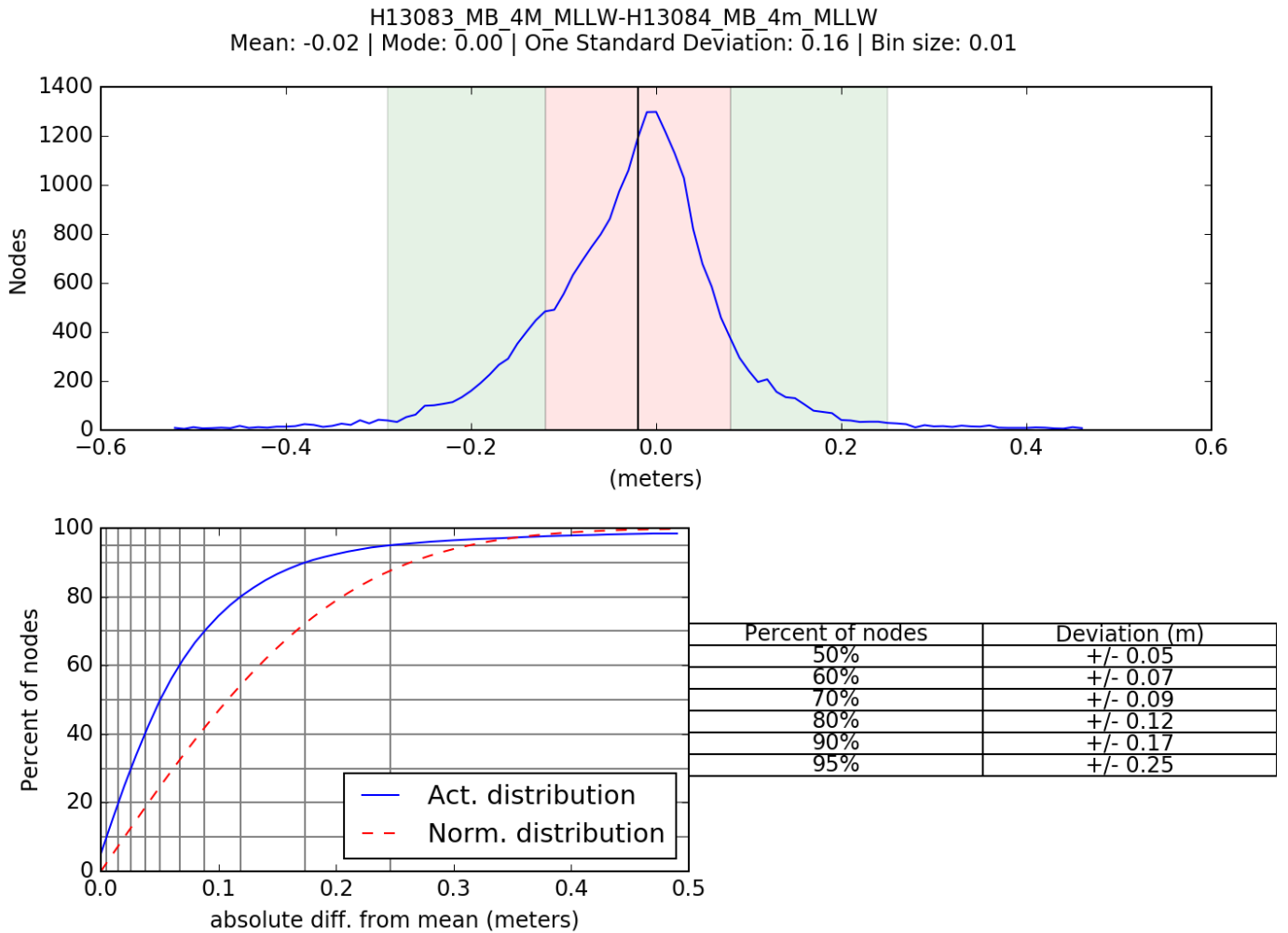


Figure 14: Pydro derived plot showing H13083 / H13084 comparison statistics.

W00320

The junction with survey W00320 encompassed 6.88 square nautical miles throughout the entire northern portion of the H13083 survey area. A comparison was made with the Compare Grids function of Pydro Explorer using a difference surface derived from 4-meter Caris .csar surfaces of each survey. Analysis of the difference surface indicated that H13083 is an average of 4.580 meters deeper than W00320 with a standard deviation of 0.66 meters. According to its Survey Acceptance Review (SAR), W00320 was a habitat mapping survey acquired with a Simrad ME70, a sonar normally used to collect water column data for fisheries applications. Data from the ME70 are not suitable for object detection, feature disapproval or for areas of critical under-keel clearance. This information helps to explain the poor comparison between H13083 and W00320 data. The sign, large magnitude, and relatively low standard deviation of this offset suggest a systematic rather than random error in the SHIMADA dataset. The hydrographer suspects that there may have been an error in static offset application during W00320 acquisition and/or processing. The hydrographer recommends that H13083 fully supersede W00320 in the common area.

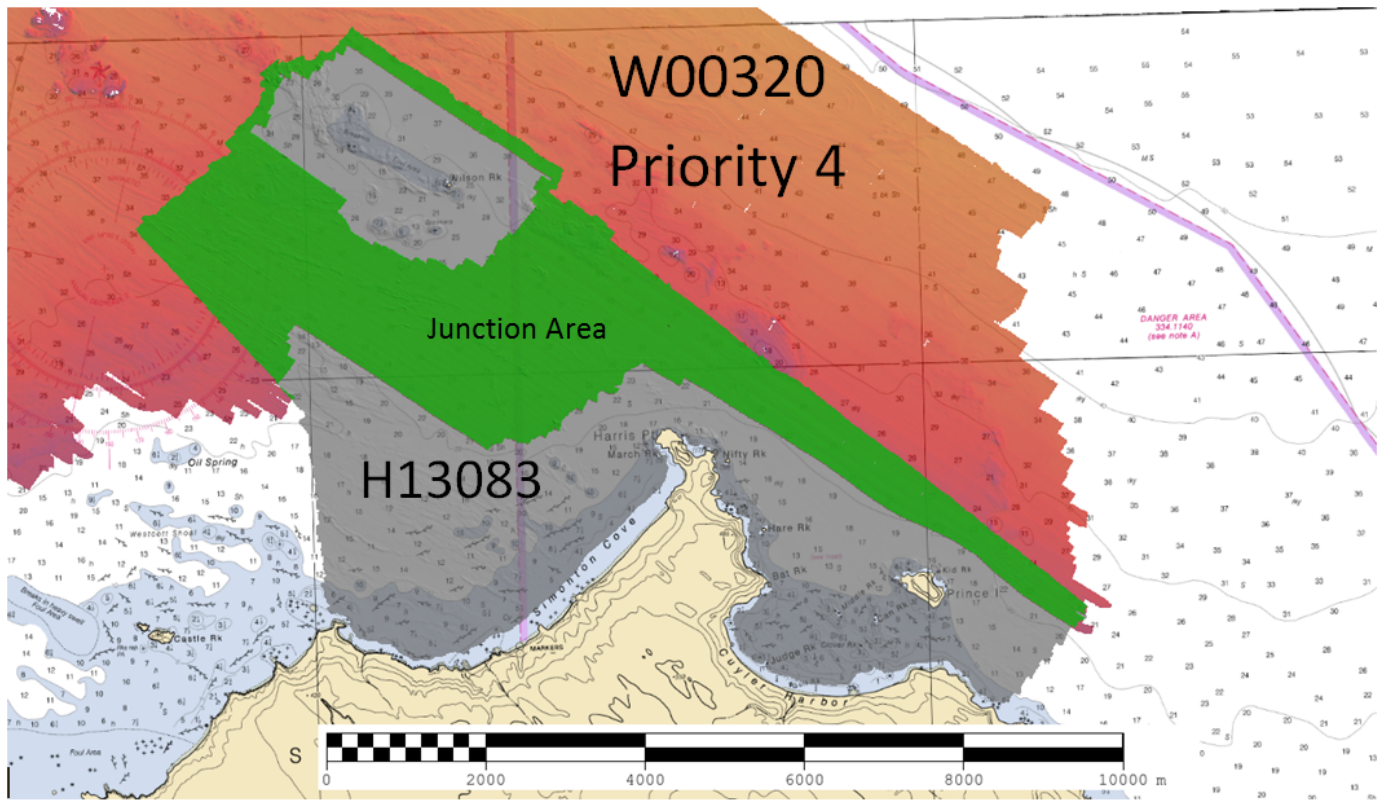


Figure 15: Overview of survey junction with W00320.

Comparison Distribution

Per Grid: H13083_MB_4M_MLLW-W00320_MB_4m_MLLW_Office_fracAllowErr.csar

0% nodes pass (1191), min=0.0, mode=3.8 mean=3.8 max=39.2

Percentiles: 2.5%=2.4, Q1=3.4, median=3.8, Q3=4.2, 97.5%=5.0

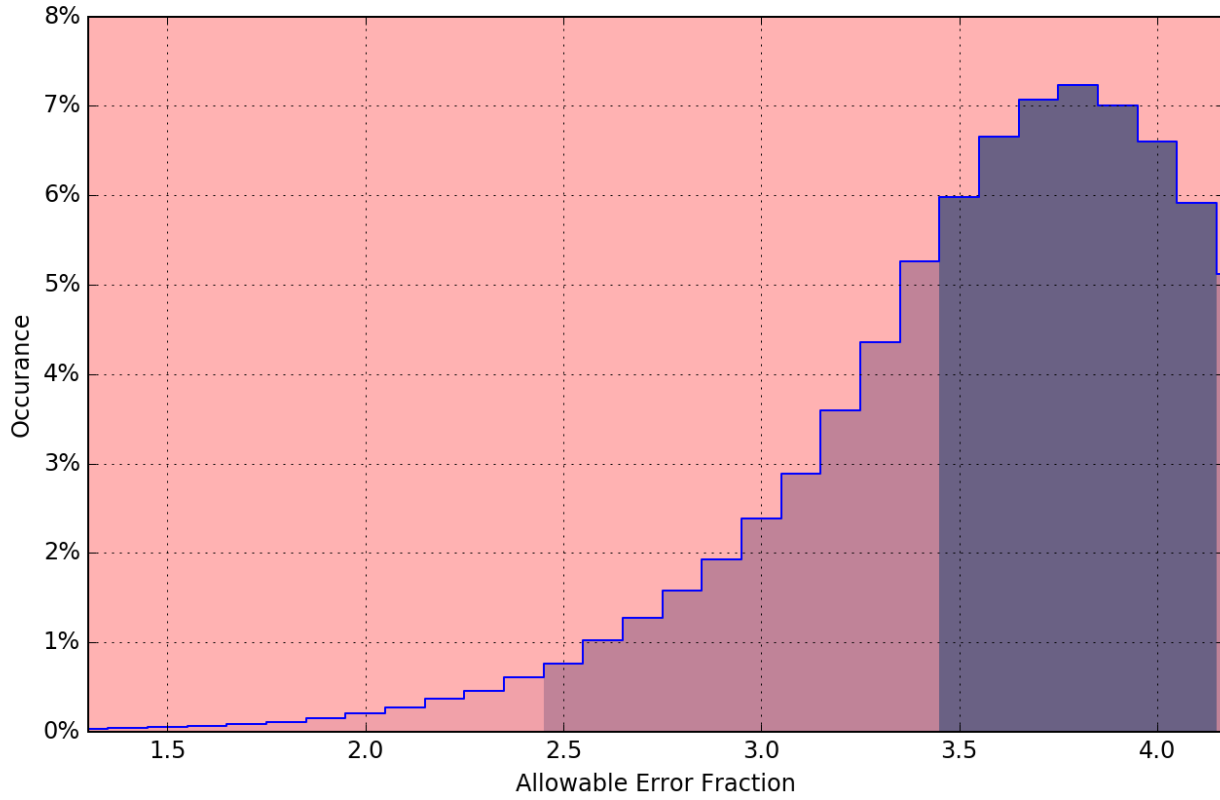


Figure 16: Plot showing the allowable error between H13083 and W00320.

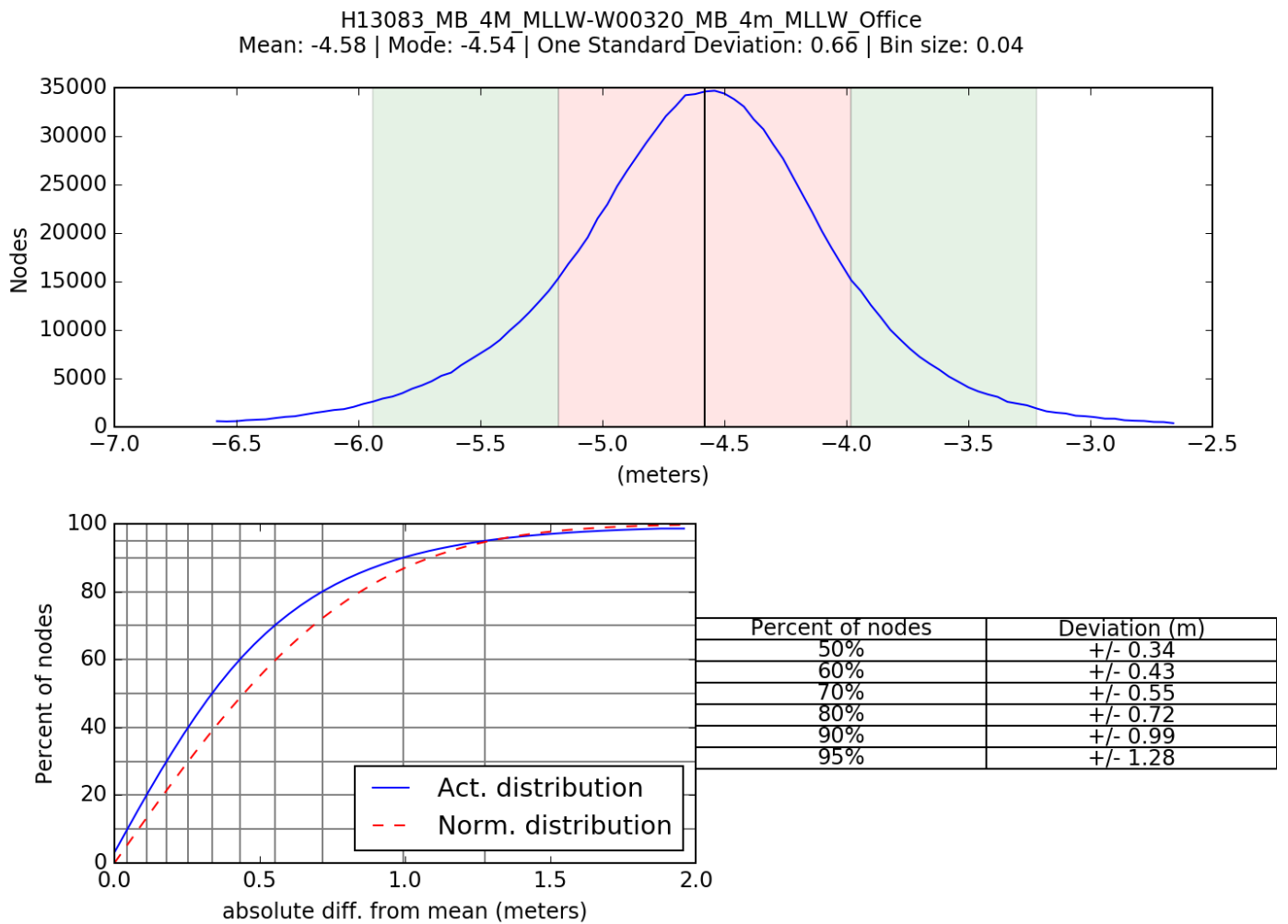


Figure 17: Pydro derived plot showing H13083 / W00320 comparison statistics.

B.2.4 Sonar QC Checks

Sonar system quality control checks were conducted as detailed in the quality control section of the DAPR.

B.2.5 Equipment Effectiveness

Sonar Settings Optimized for Backscatter Acquisition.

Due to the emphasis on acquiring high quality and consistent backscatter for this project, the Kongsberg EM2040 sonar systems were operated in fixed pulse length settings. Kongsberg SIS software was manually set to "Long" or "Short" pulse lengths by the Hydrographer-in-Charge. Generally, "Long" pulse length was

selected unless the vessel would be working in waters less than 20 meters deep for extended periods, in which case "Short," would be selected. Operating in this manner created far fewer changes in pulse length compared to running the sonar in "Auto" mode. Fewer changes in pulse length creates more consistent backscatter imagery and requires less post-processing adjustment to intensity levels. The field unit carefully monitored the quality of bathymetry, especially at the beginning of the project, to ensure that the negative impacts of a set pulse length were minimal.

B.2.6 Factors Affecting Soundings

There were no other factors that affected corrections to soundings.

B.2.7 Sound Speed Methods

Sound Speed Cast Frequency: Casts were taken every four hours during data acquisition, when there was a significant change in the surface sound speed observed, or when operating in a new area.

Sound speed profiles were obtained using Sea-Bird19plus SEACAT Profiles. All casts were concatenated into a master file and applied to MBES data using the "Nearest distance within time" (4 hours) profile selection method. The casts were also concatenated into a master file for each launch. There was one cast performed outside of the survey area for H13083. This cast was performed for another survey but applicable to this one.

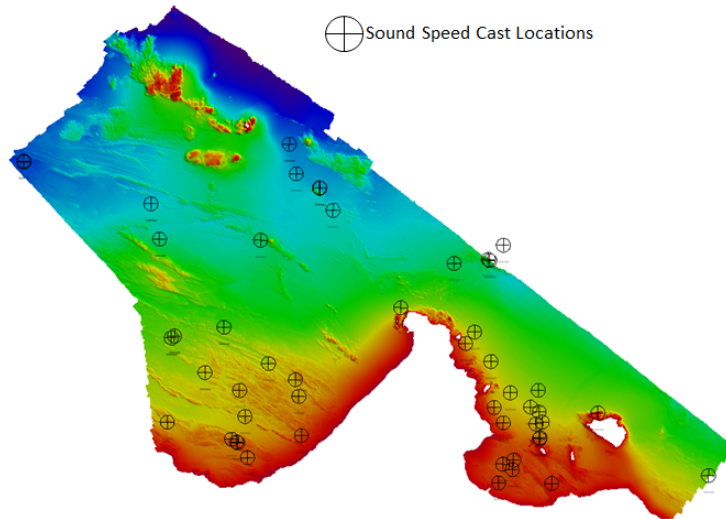


Figure 18: Sound speed cast locations.

B.2.8 Coverage Equipment and Methods

All equipment and survey methods were used as detailed in the DAPR.

B.3 Echo Sounding Corrections

B.3.1 Corrections to Echo Soundings

All data reduction procedures conform to those detailed in the DAPR.

B.3.2 Calibrations

All sounding systems were calibrated as detailed in the DAPR.

B.4 Backscatter

Raw backscatter was acquired as part of the Kongsberg .all file and therefore logged during all MBES operations and subsequently processed by RAINIER personnel using Fledermaus FMGT software. A mosaic for each vessel and frequency used (each vessel operated exclusively in 300 kHz) during this survey

has been delivered with this report. Backscatter processing procedures utilized follow those detailed in the DAPR.

B.5 Data Processing

B.5.1 Primary Data Processing Software

The following software program was the primary program used for bathymetric data processing:

Manufacturer	Name	Version
CARIS	HIPS and SIPS	10.2 10.3 10.3.1

Table 10: Primary bathymetric data processing software

The following software program was the primary program used for imagery data processing:

Manufacturer	Name	Version
Caris	FMGT	7.7.7

Table 11: Primary imagery data processing software

The following Feature Object Catalog was used: NOAA Extended Attribute File V_5_6.

B.5.2 Surfaces

The following surfaces and/or BAGs were submitted to the Processing Branch:

Surface Name	Surface Type	Resolution	Depth Range	Surface Parameter	Purpose
H13083_MB_VR_MLLW	CUBE	Variable Resolution meters	0.0668 meters - 75.841 meters	VR	Complete MBES
H13083_MB_VR_MLLW_Final	CUBE	Variable Resolution meters	0.668 meters - 75.841 meters	VR	Complete MBES

Table 12: Submitted Surfaces

Submitted surfaces were generated using the recommended parameters for depth-based (Ranges) Caris variable-resolution bathymetric grids as specified in HSTD 2017-2. The resolution values in the table above are not accurate: the XML-DR schema used to generate this report did not accommodate variable resolution grids. The "999" value was entered merely as a place holder.

Two critical soundings were created for this survey, both were identified as dangers to navigation.

SAR: Surfaces submitted to the Pacific Hydrographic Branch as part of H13083 are "H13083_MLLW_VR.csar" and "H13083_MLLW_VR_Final.csar".

C. Vertical and Horizontal Control

Additional information discussing the vertical or horizontal control for this survey can be found in the accompanying HVCR.

Shoreline features were reduced to MLLW using traditional tide methods via TCARI. All MBES bathymetry were acquired relative to the ellipsoid and reduced to MLLW via VDatum. These processes are detailed in the DAPR.

C.1 Vertical Control

The vertical datum for this project is Mean Lower Low Water.

Traditional Methods Used:

TCARI

The following National Water Level Observation Network (NWLON) stations served as datum control for this survey:

Station Name	Station ID
Los Angeles, CA	9410660
Santa Monica, CA	9410840
Santa Barbara, CA	9411340
Oil Platform Harvest, CA	9411406
Port San Luis, CA	9412110
Monterey, CA	9413450

Table 13: NWLON Tide Stations

File Name	Status
H13083_TCARI_Features_tides.tid	Final Approved

Table 14: Water Level Files (.tid)

File Name	Status
L397RA2017Rev.tc	Final

Table 15: Tide Correctors (.zdf or .tc)

A request for final approved tides was sent to N/OPS1 on 11/08/2017. The final tide note was received on 11/17/2017.

H113083 shoreline features were tide corrected using a .tid file created in Pydro utilizing the "TCARI TID file via S-57" function then loaded in CARIS Notebook. H13083 MBES data were reduced to MLLW using VDatum processing methods.

ERS Methods Used:

ERS via VDATUM

Ellipsoid to Chart Datum Separation File:

OPR-L397-RA-17_VDatumArea_xyNAD83-MLLW_geoid12b.csar

The Wide Area Augmentation System (WAAS) was used for real-time horizontal control for this survey.

C.2 Horizontal Control

The horizontal datum for this project is North American Datum of 1983 (NAD83).

The projection used for this project is Universal Transverse Mercator (UTM) Zone 10 North.

C.3 Additional Horizontal or Vertical Control Issues

C.3.1 SBET Processing Method

Precise Positioning-Real Time Extended (PP-RTX) processing methods were used in Applanix POSPac MMS 8.1 software to produce SBETs for post-processing horizontal correction.

D. Results and Recommendations

D.1 Chart Comparison

A comparison was made between H13083 survey data and ENC US5CA464M using CUBE surfaces, selected soundings and contours created in Caris HIPS.

D.1.1 Electronic Navigational Charts

The following are the largest scale ENCs, which cover the survey area:

ENC	Scale	Edition	Update Application Date	Issue Date	Preliminary?
US5CA64M	1:40000	9	10/06/2016	10/06/2016	NO

Table 16: Largest Scale ENCs

US5CA64M

Survey H13083 is wholly contained within ENC US5CA64M. A comparison was made between surveyed contours and ENC US5CA64M depth curves. The ENC's charted 30-, 20-, and 10-fathom curves are in general agreement with surveyed contours. Areas of note are addressed in the figures below. The charted 3- and 5-fathom curves generally agree with surveyed contours, but an apparent lack of historical survey data in Simonton Cove and around Harris Point has resulted in large gaps along these charted depth curves.

Two Dangers to Navigation (DTON) were identified in the H13083 survey area and submitted to Marine Chart Division's (MCD) Nautical Data Branch. Refer to the H13083_DTON_Report and H13083_Second_DTON_Report for location and descriptions. As of 03/27/2018, both DTONs were found to be properly charted on the largest scale ENC and RNC.

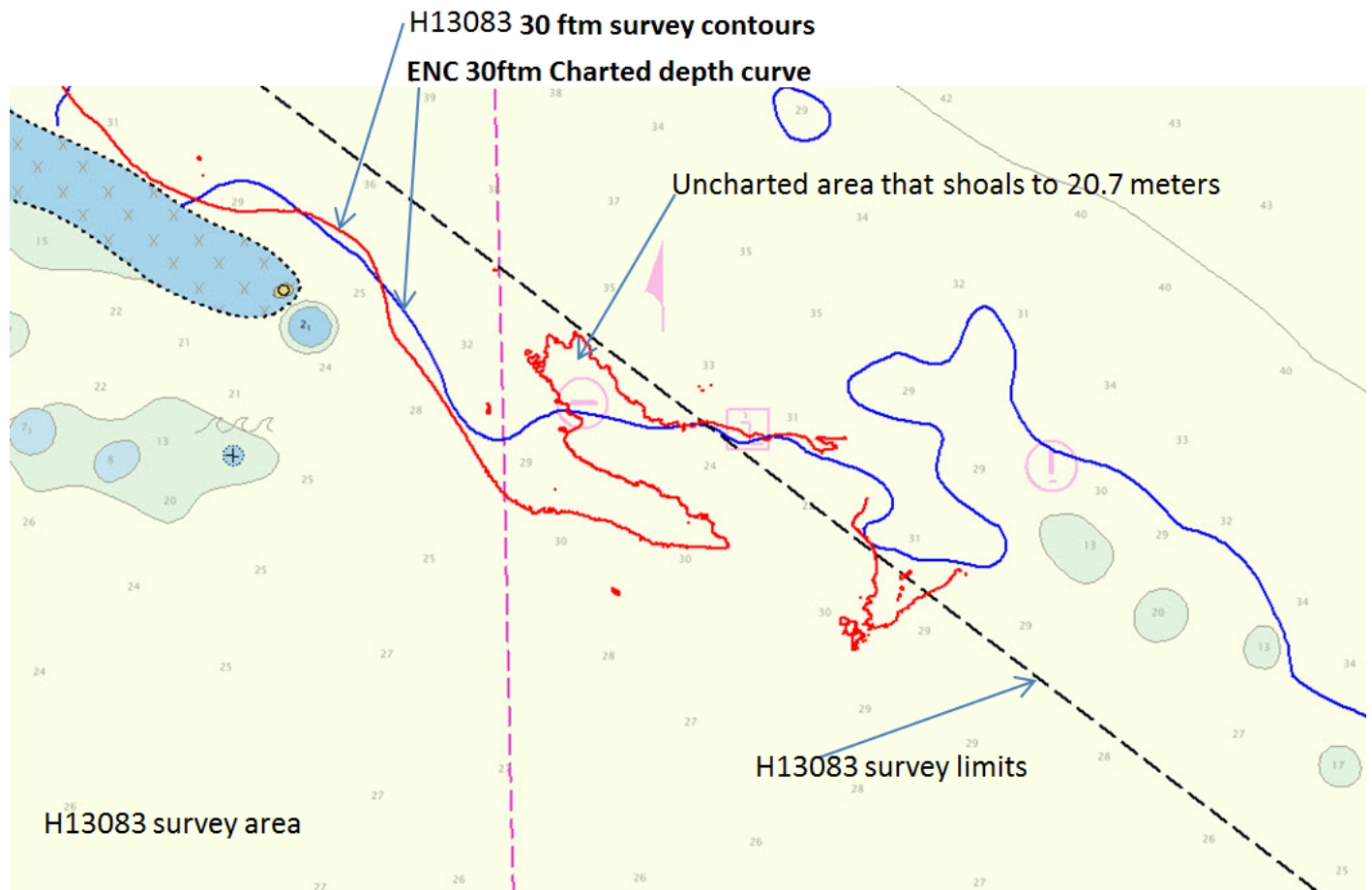


Figure 19: ENC US5CA64M overlaid with the surveyed 30-fathom contour.

ENC charted 20 ftm depth curves in blue
H13083 20 ftm Survey Contours in Red

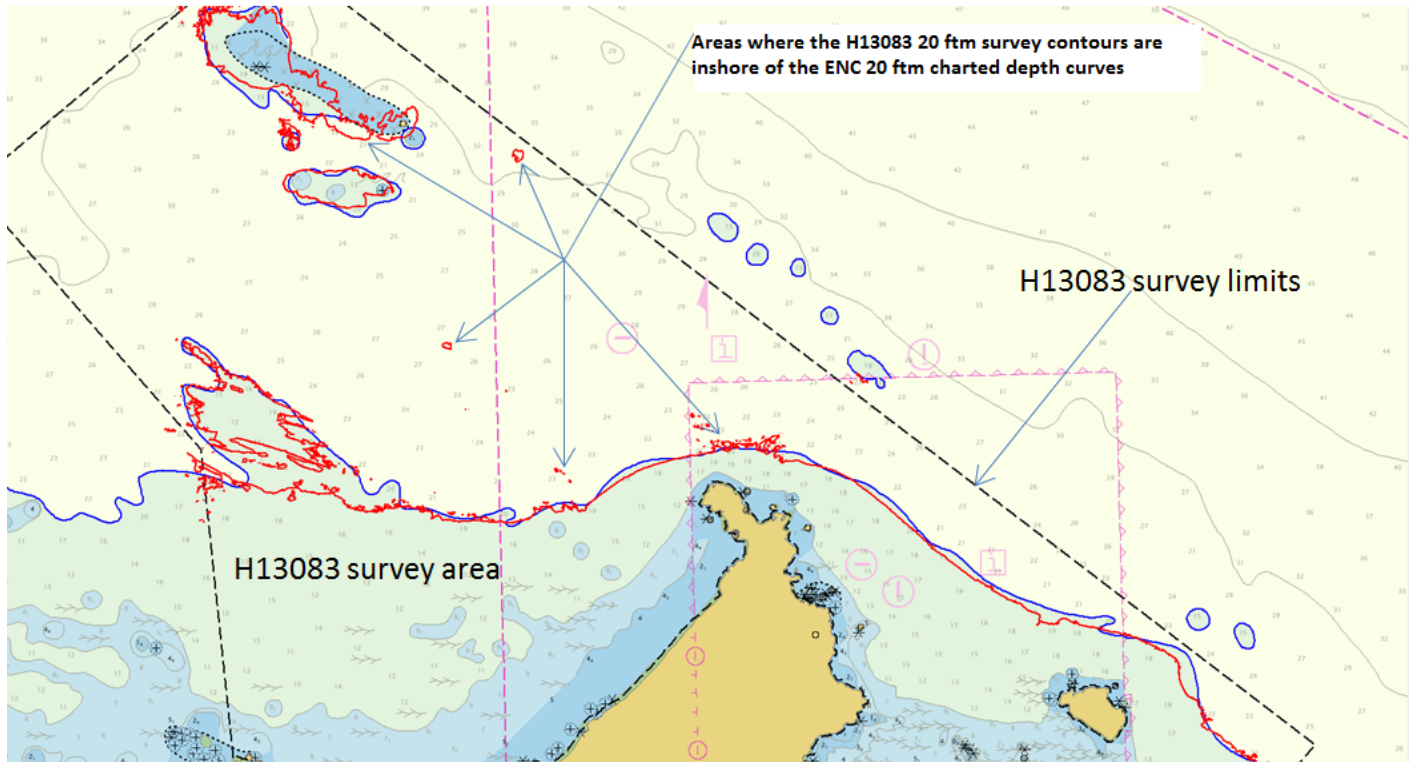


Figure 20: ENC US5CA64M overlaid with the surveyed 20-fathom contour.

ENC Chart Depth 10 ftm coutour- blue
 H13083 10 ftm survey contours- red

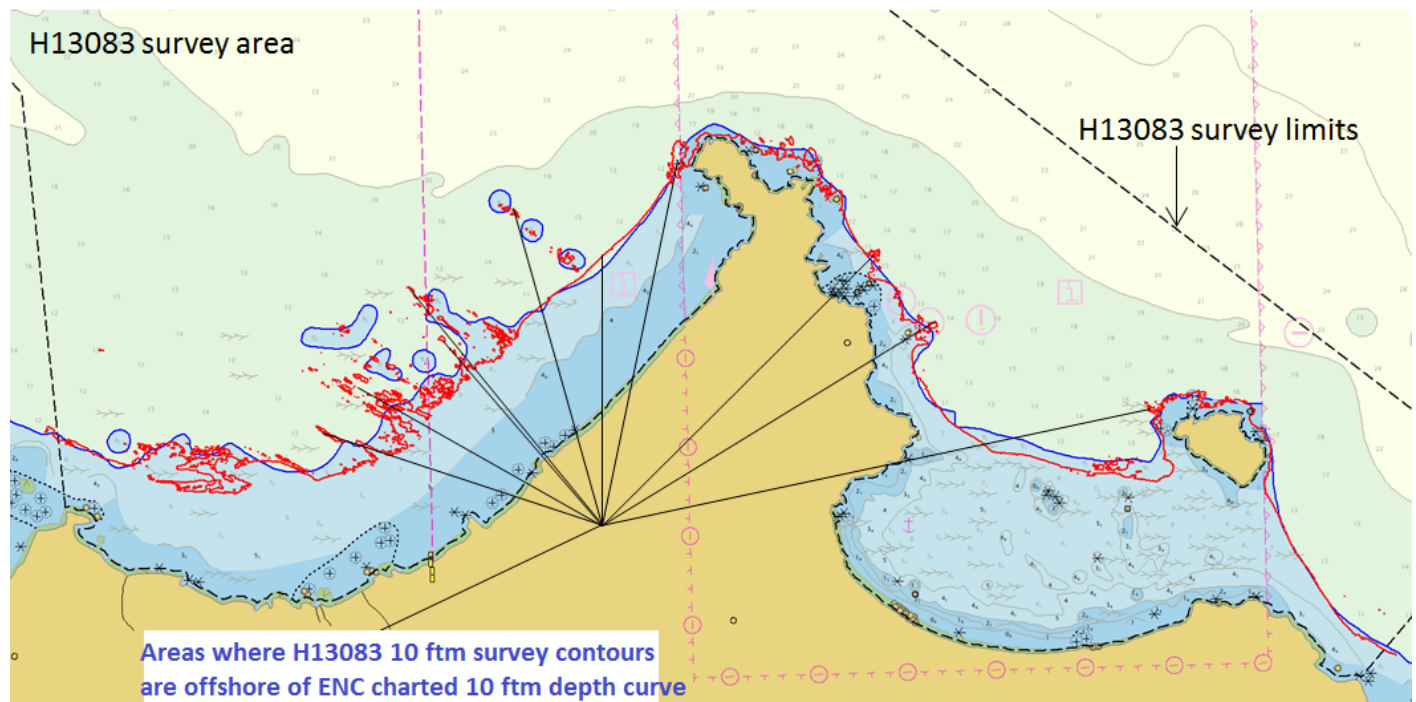


Figure 21: ENC US5CA64M overlaid with the surveyed 10-fathom contour.

D.1.2 Maritime Boundary Points

No Maritime Boundary Points were assigned for this survey.

D.1.3 Charted Features

No charted features exist for this survey.

D.1.4 Uncharted Features

No new navigationally significant features were detected that were not included in the H13083 Final Feature File or elsewhere in this report.

D.1.5 Shoal and Hazardous Features

One significant feature is a charted foul area including the northwest of Wilson rock.

Features of navigational significance are discussed in the chart comparison sections above or are included in the H13083 Final Feature File submitted with this report.

D.1.6 Channels

One designated anchorage exists on H13083. It is located in Cuyler Harbor. The field unit verified the anchorage's utility by anchoring at that location several times.

D.1.7 Bottom Samples

A bottom sample requirement was not specified in the project instructions, however photos at five individual sites were obtained using a Go Pro camera attached to a CTD probe. Video footage was recorded during the CTD cast and still photos were derived from the footage to obtain a "virtual bottom sample". A copy of the pertinent acquisition log is also included with photos to link each bottom sample site with a lat/long. These images and acquisition logs are included with the Separates section of this report for archival purposes.

D.2 Additional Results

D.2.1 Shoreline

In the field, all assigned features that were safe to approach, were addressed as required with S-57 attribution and recorded in the H13083_Final_Feature_File (FFF) to best represent the features at chart scale. This file also includes new features found in the field as well as recommendations to update, retain or delete assigned features.

Charted coastline, particularly in the eastern portion of the sheet, was observed to deviate significantly from the surveyed 0-fathom contour as well as from the surveyed shoreline data. Where safe to approach, offshore features were re-positioned in the field, however the shoreline skiffs lacked the equipment to make corrections to the entire coastline. As an additional quality control measure, the hydrographer downloaded vector data from the NGS NOAA Shoreline Data Explorer website. The NGS Shoreline Data showed good agreement with H13083 hydrographic and shoreline data of the common area. The Hydrographer recommends that the ENC be updated with the much more accurate NGS shoreline data.

D.2.2 Prior Surveys

No prior survey comparisons exist for this survey.

D.2.3 Aids to Navigation

No aids to navigation (ATONs) exist for this survey.

SAR: Two special purpose beacons, located in Simonton Cove on the north side of San Miguel Island were observed to be on station during survey operations and are addressed in the final feature file.

D.2.4 Overhead Features

No overhead features exist for this survey.

D.2.5 Submarine Features

No submarine features exist for this survey.

D.2.6 Platforms

No platforms exist for this survey.

D.2.7 Ferry Routes and Terminals

No ferry routes or terminals exist for this survey.

D.2.8 Abnormal Seafloor and/or Environmental Conditions

No abnormal seafloor and/or environmental conditions exist for this survey.

D.2.9 Construction and Dredging

No present or planned construction or dredging exist within the survey limits.

D.2.10 New Survey Recommendation

No new surveys or further investigations are recommended for this area.

D.2.11 Inset Recommendation





No new insets are recommended for this area.

E. Approval Sheet

As Chief of Party, field operations for this hydrographic survey were conducted under my direct supervision, with frequent personal checks of progress and adequacy. I have reviewed the attached survey data and reports.

All field sheets, this Descriptive Report, and all accompanying records and data are approved. All records are forwarded for final review and processing to the Processing Branch.

The survey data meets or exceeds requirements as set forth in the NOS Hydrographic Surveys and Specifications Deliverables Manual, Field Procedures Manual, Letter Instructions, and all HSD Technical Directives. These data are adequate to supersede charted data in their common areas. This survey is complete and no additional work is required with the exception of deficiencies noted in the Descriptive Report.

Approver Name	Approver Title	Approval Date	Signature
Benjamin K. Evans, CDR/NOAA	Commanding Officer NOAA Ship Rainier	04/05/2018	 Digitally signed by EVANS.BENJAMIN.K.1237217094 Date: 2018.04.05 20:16:04 -07'00'
Scott E. Broo, LT/NOAA	Field Operations Officer NOAA Ship Rainier	04/05/2018	 Digitally signed by BROO.SCOTT.EDWARD.139659997 6 Date: 2018.04.08 08:40:47 -07'00'
James B. Jacobson	Chief Survey Technician NOAA Ship Rainier	04/05/2018	 JACOBSON.JAMES.BRYAN.126 9664017 I have reviewed this document 2018.04.05 19:42:19 -07'00'
William Blalock	Sheet Manager NOAA Ship Rainier	04/05/2018	 JACOBSON.JAMES.BRYAN.12696 64017 I am signing for William Blalock 2018.04.05 19:44:49 -07'00'

F. Table of Acronyms

Acronym	Definition
AHB	Atlantic Hydrographic Branch
AST	Assistant Survey Technician
ATON	Aid to Navigation
AWOIS	Automated Wreck and Obstruction Information System
BAG	Bathymetric Attributed Grid
BASE	Bathymetry Associated with Statistical Error
CO	Commanding Officer
CO-OPS	Center for Operational Products and Services
CORS	Continually Operating Reference Station
CTD	Conductivity Temperature Depth
CEF	Chart Evaluation File
CSF	Composite Source File
CST	Chief Survey Technician
CUBE	Combined Uncertainty and Bathymetry Estimator
DAPR	Data Acquisition and Processing Report
DGPS	Differential Global Positioning System
DP	Detached Position
DR	Descriptive Report
DTON	Danger to Navigation
ENC	Electronic Navigational Chart
ERS	Ellipsoidal Referenced Survey
ERZT	Ellipsoidally Referenced Zoned Tides
FFF	Final Feature File
FOO	Field Operations Officer
FPM	Field Procedures Manual
GAMS	GPS Azimuth Measurement Subsystem
GC	Geographic Cell
GPS	Global Positioning System
HIPS	Hydrographic Information Processing System
HSD	Hydrographic Surveys Division
HSSD	Hydrographic Survey Specifications and Deliverables

Acronym	Definition
HSTP	Hydrographic Systems Technology Programs
HSX	Hypack Hysweep File Format
HTD	Hydrographic Surveys Technical Directive
HVCR	Horizontal and Vertical Control Report
HVF	HIPS Vessel File
IHO	International Hydrographic Organization
IMU	Inertial Motion Unit
ITRF	International Terrestrial Reference Frame
LNM	Linear Nautical Miles
MCD	Marine Chart Division
MHW	Mean High Water
MLLW	Mean Lower Low Water
NAD 83	North American Datum of 1983
NAIP	National Agriculture and Imagery Program
NALL	Navigable Area Limit Line
NM	Notice to Mariners
NMEA	National Marine Electronics Association
NOAA	National Oceanic and Atmospheric Administration
NOS	National Ocean Service
NRT	Navigation Response Team
NSD	Navigation Services Division
OCS	Office of Coast Survey
OMAO	Office of Marine and Aviation Operations (NOAA)
OPS	Operations Branch
MBES	Multibeam Echosounder
NWLON	National Water Level Observation Network
PDBS	Phase Differencing Bathymetric Sonar
PHB	Pacific Hydrographic Branch
POS/MV	Position and Orientation System for Marine Vessels
PPK	Post Processed Kinematic
PPP	Precise Point Positioning
PPS	Pulse per second
PRF	Project Reference File

Acronym	Definition
PS	Physical Scientist
PST	Physical Science Technician
RNC	Raster Navigational Chart
RTK	Real Time Kinematic
SBES	Singlebeam Echosounder
SBET	Smooth Best Estimate and Trajectory
SNM	Square Nautical Miles
SSS	Side Scan Sonar
ST	Survey Technician
SVP	Sound Velocity Profiler
TCARI	Tidal Constituent And Residual Interpolation
TPE	Total Propagated Error
TPU	Topside Processing Unit
USACE	United States Army Corps of Engineers
USCG	United Stated Coast Guard
UTM	Universal Transverse Mercator
XO	Executive Officer
ZDA	Global Positioning System timing message
ZDF	Zone Definition File

Subject: Re: CINMS survey boundary gaps along prior surveys
From: "ops.rainier" <ops.rainier@noaa.gov>
Date: 10/2/2017 07:25
To: Meredith Payne - NOAA Federal <meredith.payne@noaa.gov>
CC: ChiefST <ChiefST.Rainier@noaa.gov>, Peter Holmberg - NOAA Federal <peter.holmberg@noaa.gov>, _OMAO MOP CO Rainier <co.rainier@noaa.gov>

Meredith,

Thank you very much. We will cover the gaps as operationally possible.

Scott

On 10/2/2017 6:19 AM, Meredith Payne - NOAA Federal wrote:

Please push the sheet limits for OPR-L397-RA-17 out to cover those gaps, if operationally possible.

Thank you,
Meredith

On Sun, Oct 1, 2017 at 12:24 PM, ops.rainier <ops.rainier@noaa.gov> wrote:

Hi Meredith,

PS Pete Holmberg joined us on Saturday for the cruise south. With him, he brought surfaces for the surveys adjacent to the CINMS sheets. When CST Jacobson opened them he noticed there are some gaps you needed to be aware of. Please see the attached images as a reference. These prior surveys are in the SAR process now, and have passed RSA. I wanted to shine a light on this because I believe OCS would like to not leave these gaps in coverage, but with CINMS paying for much of the project, I can't be sure that these sheet boundaries aren't where they should be. RAINIER's sheet managers are finishing up their sheet preps over the next couple of days, so a quick resolution here would be ideal. However, I imagine this may be the first you've seen of this. Please let us know how you'd like us to proceed.

Thanks,

Scott

--

Meredith C. Payne
Physical Scientist,
Hydrographic Surveys Division Operations Branch

National Oceanic & Atmospheric Administration
1315 East-West Hwy, SSMC3 6201
Silver Spring, MD 20910
240-533-0025



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service
Silver Spring, Maryland 20910

PROVISIONAL TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : November 17, 2017

HYDROGRAPHIC BRANCH: Pacific
HYDROGRAPHIC PROJECT: OPR-L397-RA-2017
HYDROGRAPHIC SHEET: H13083

LOCALITY: Cuyler Harbor to Simonton Cove, Channel Islands National
Marine Sanctuary, and Offshore of Morro Bay, California

TIME PERIOD: October 5 - November 4, 2017

TIDE STATION USED: Los Angeles, CA 9410660
Lat. 33° 43.2' N Long. 118° 16.4' W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.448 meters

TIDE STATION USED: Santa Monica, CA 9410840
Lat. 34° 0.5' N Long. 118° 30' W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.428 meters

TIDE STATION USED: Santa Barbara, CA 9411340
Lat. 34° 24.2' N Long. 119° 41.6' W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.415 meters

TIDE STATION USED: Oil Platform Harvest, CA 9411406
Lat. 34° 28.1' N Long. 120° 40.9' W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.373 meters

TIDE STATION USED: Port San Luis, CA 9412110
Lat. 35° 10.1' N Long. 120° 45.2' W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.408 meters

TIDE STATION USED: Monterey, CA 9413450
Lat. 36° 36.3' N Long. 121° 53.3' W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.412 meters



REMARKS: RECOMMENDED Grid

Please use the TCARI grid "L397RA2017Rev.tc" as the final grid for project OPR-L397-RA-2017, H13083, during the time period between October 5 - November 4, 2017.

Refer to attachments for grid information.

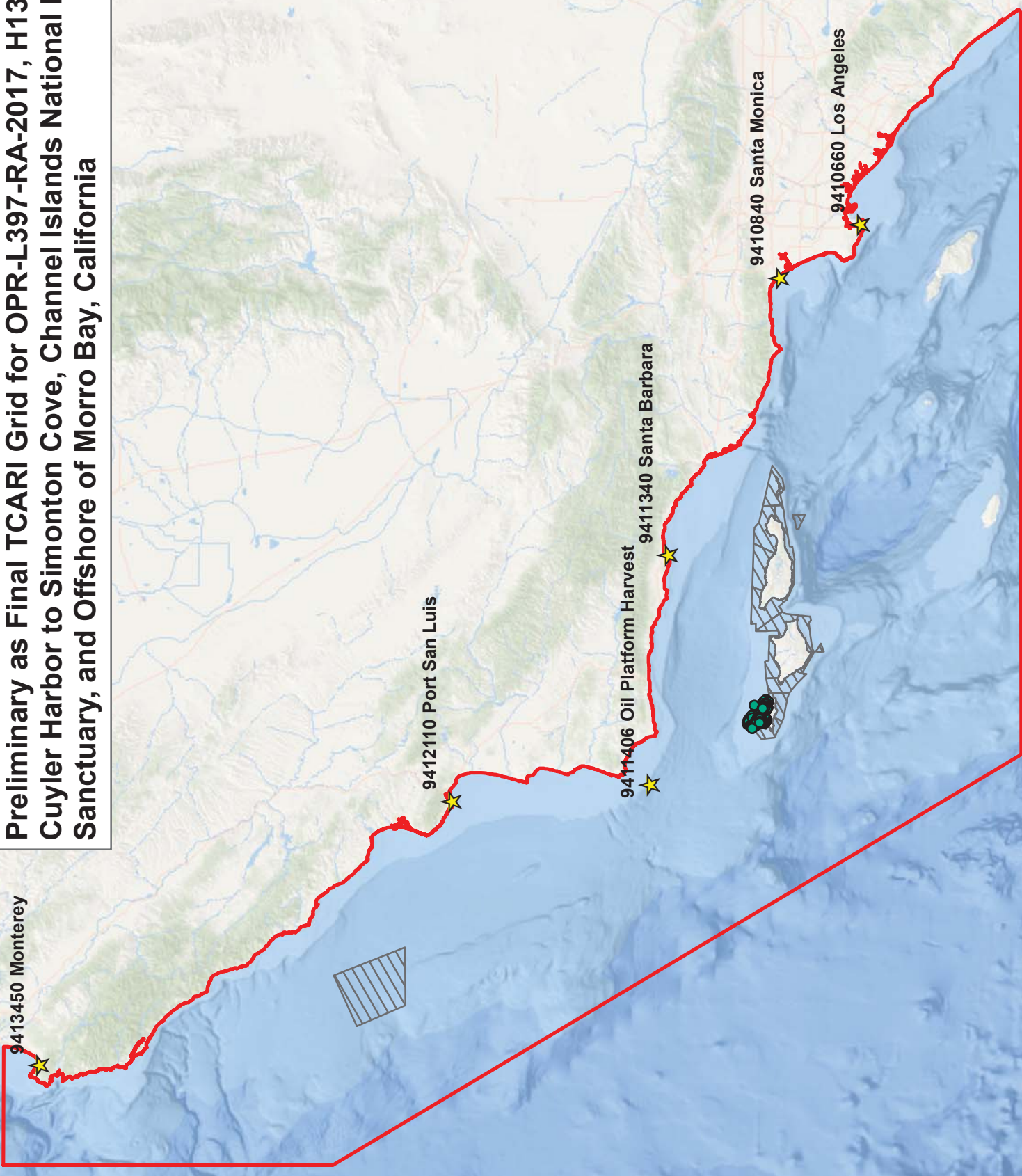
Note 1: Provided time series data are tabulated in metric units (meters), relative to MLLW and on Greenwich Mean Time on the 1983-2001 National Tidal Datum Epoch (NTDE).

Note 2: Annual leveling for Los Angeles (9410660) and Port San Luis (9412110) was not completed in FY17. A review of the verified leveling records from October 2007 - March 2016 shows the tide station benchmark networks to be stable within an allowable 0.009 m tolerance. This Tide Note may be used as final stability verification for survey OPR-L397-RA-2017, H13083. CO-OPS will immediately provide a revised Tide Note should subsequent leveling records indicate any benchmark network stability movement beyond the allowable 0.009 m tolerance.

BURKE.PATRICK.B. Digitally signed by
1365830335 BURKE.PATRICK.B.1365830335
Date: 2017.11.17 12:38:41 -05'00'

CHIEF, OCEANOGRAPHIC DIVISION

**Preliminary as Final TCARI Grid for OPR-L397-RA-2017, H13083
Cuyler Harbor to Simonton Cove, Channel Islands National Marine
Sanctuary, and Offshore of Morro Bay, California**



APPROVAL PAGE

H13083

Data meet or exceed current specifications as certified by the OCS survey acceptance review process. Descriptive Report and survey data except where noted are adequate to supersede prior surveys and nautical charts in the common area.

The following products will be sent to NCEI for archive

- Descriptive Report
- Collection of Bathymetric Attributed Grids (BAGs)
- Collection of backscatter mosaics
- Processed survey data and records
- Bottom Samples
- GeoPDF of survey product

The survey evaluation and verification has been conducted according current OCS Specifications, and the survey has been approved for dissemination and usage of updating NOAA's suite of nautical charts.

Approved: _____

Commander Olivia Hauser, NOAA
Chief, Pacific Hydrographic Branch